Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (original): A power converter with at least one Direct Current (DC) port and at least one Alternating Current (AC) port where at least two ports are coupled by a high frequency transformer with some method of synchronizing semiconductor switching elements in at least two of the ports and where at least one DC port is capable of two-quadrant operation by any previously known method and where at least one AC port is capable of four-quadrant operation and where said AC port has the capability of operating as a boost regulator when sourcing power from the AC port into said high frequency transformer and where the inductor used to enable this boost function, is charged without effectively short circuiting any windings of said high frequency transformer.

Claim 2 (original): A power converter, according to claim 1, having an AC port capable of four-quadrant operation substantially consisting of; three semiconductor switch elements, each having bipolar voltage blocking, bi-directional current control and bi-directional current conduction capabilities, an inductor, a capacitor, and a center-tapped winding of a high frequency transformer that provides coupling to at least one other port.

Claim 3 (original): A power converter, according to claim 2, having an AC port capable of four-quadrant operation where; the high frequency transformer has a center-tapped winding referred to as the common point, one pole of the first switch element is connected to one end of the transformer winding, one pole of the second switch is connected to the other end of the transformer winding, the unconnected poles of the first and second switch are connected together and to one pole of a third switch element and to one end of the inductor, the other pole of the third switch is connected to the common point which is also the one terminal of the AC port, the other end of the inductor is connected to the other terminal of the AC port, the capacitor is connected across the two AC port terminals.

Claim 4 (original): A power converter, according to claim 3 where the capacitor is connected across the AC port is not included.

Claim 5 (original): A power converter according to claim 1 having one AC port and two DC ports all coupled by a high frequency transformer where one DC port is capable of two-quadrant operation for discharging and charging a storage battery and where the second DC port is only capable of sinking energy from a second DC source and where this second DC port is capable of bucking or buck regulating the voltage from said second DC source.

Claim 6 (original): A power converter according to claim 5 where said second DC port is capable of boosting the voltage from said second DC source rather than bucking or buck regulating said voltage.

Claim 7 (original): A power converter, according to claim 5, having a DC port capable of only sinking energy and bucking or buck regulating the voltage from a DC source and substantially consisting of; three semiconductor switches, one rectifier diode, one capacitor, one inductor and one center-tapped winding on said high frequency transformer.

Claim 8 (original): A power converter, according to claim 6, having a DC port capable of only sinking energy and boosting the voltage from a DC source and substantially consisting of; three semiconductor switches, one rectifier diode, one capacitor, one inductor and one center-tapped winding on said high frequency transformer.

Claim 9 (original): A power converter, according to claim 1, with one bi-directional battery port, one or more additional DC ports for sinking energy from a photovoltaic array, fuel cell, wind turbine, micro-turbine or reciprocating generator, and one or more four-quadrant AC ports where all said ports are coupled with a high frequency transformer.

Claim 10 (original): An uninterruptible power supply (UPS), according to claim 1, with one bi-directional battery port, one four-quadrant AC port for the line connection, and one or two AC ports for the "uninterruptible" loads and where all said ports are coupled with a high frequency transformer.

Claim 11 (original): A power converter, according to claim 1, for fuel cell applications with one bi-directional battery port, one DC port for sinking energy from the fuel cell, at least one DC port for sourcing auxiliary DC power to the fuel cell system and at least one four-quadrant AC port where all ports are coupled with a high frequency transformer.

Claim 12 (original): A semiconductor switch element or circuit capable of bipolar voltage blocking, bi-directional current control and bi-directional current conduction capabilities consisting of two insulated gate bipolar transistors (IGBTs) connected with common emitters where the two poles of the AC switch are the respective IGBT collector terminals and where the two IGBT gate terminals are driven with substantially the same signal.

Claim 13 (original): A semiconductor switch element or circuit, according to claim 12, where each IGBT device is paralleled with a MOSFET device; drain to collector and source to emitter and where all four gates are driven on and off at substantially the same time.

Claim 14 (original): A semiconductor switch element or circuit, according to claim 13, where more than one MOSFET and/or IGBT is parallel in a given circuit position.

Claim 15 (original): A semiconductor switch element or circuit, according to claims 13 and 14, where the turnoff command to the MOSFET devices is slightly delayed with respect to the IGBT devices to take advantage of the faster MOSFET switching characteristics when commutating switch element currents.

Claim 16 (original): A power converter according to claim 1 having two AC ports and one DC ports all coupled by a high frequency transformer where one DC port is capable of two-quadrant operation for discharging and charging a storage battery and where the first AC port is only capable of sinking energy from an AC wind turbine and where the second AC port is capable of four-quadrant operation at a multi-purpose port for connection to the utility grid, AC loads or an AC reciprocating generator.

Claim17 (new): A DC to AC power converter with one or more Direct Current (DC) ports and one Alternating Current (AC) port where at least one DC port and one AC port are coupled by a high frequency transformer with some method of synchronizing semiconductor switching elements in the ports and where the AC port is intended for connection to the utility grid or utility mains and where the primary energy storage inductor for filtering or smoothing high frequency pulses into sinusoidal currents is not located in said AC port and where at least one DC port is capable of either boost or buck regulation to achieve the desired operating point of a connected DC energy source.

Claim18 (new): A power converter according to claim 17 with one or more additional AC ports.

Claim19 (new): A power converter according to claim 17 or claim 18 for photovoltaic grid-interactive applications, with two or more DC ports intended for connections to different photovoltaic arrays or sub-arrays and where each DC port is capable of regulating the maximum power point of the photovoltaic array to which it is connected.

Claim 20 (new): A power converter according to claim 17 or claim 18 where the high frequency switching elements in at least one AC port switch at a substantially 50% duty cycle and thereby apply high frequency, square wave excitation to the transformer with an amplitude equal to the instantaneous AC port voltage.

Claim 21 (new): A power converter according to claim 17 where there are three AC ports intended for connection to a three-phase AC source or sink.

Claim 22 (new): A power converter according to claim 1 where there are three AC ports intended for connection to a three-phase AC source or sink.

Claim 23 (new): A power converter with at least one Direct Current (DC) port and at least one Alternating Current (AC) port where at least two ports are coupled by a high frequency transformer with some method of synchronizing semiconductor switching elements in at least two of the ports and where at least one DC port is capable of two-quadrant operation by any previously known method and where at least one AC port is capable of four-quadrant operation and where said AC port has the capability of operating as a boost regulator when sourcing power from the AC port into said high frequency transformer.

Claim 24 (new): A simple DC to AC power converter with at least one Direct Current (DC) port and at least one Alternating Current (AC) port where at least two ports are coupled by a high frequency transformer with some method of synchronizing semiconductor switching elements in at least two of the ports and where at least one DC port is capable of one or two quadrant operation by any previously known method and where at least one AC port is capable of two or four quadrant operation.